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10/723,643	11/24/2003	Sundaresan Ramamoorthy	200208157-1	9724

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FORT COLLINS, CO 80527-2400

EXAMINER

PATEL, CHIRAG R

ART UNIT	PAPER NUMBER
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2441

NOTIFICATION DATE	DELIVERY MODE
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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/723,643	Applicant(s) RAMAMOORTHY, SUNDARESAN	
	Examiner CHIRAG R. PATEL	Art Unit 2441	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments

Applicant's arguments filed September 9, 2008 have been fully considered but they are not persuasive. A discussion is provided below.

Examiner asserts that Kazemi discloses a server resource environment as providing access to the particular resource, DSR is interpreted as server a, and the servers are interpreted as server b, per Col 2 lines 3-15, "According to yet another aspect of the system, dynamic remapping of the servers providing access to particular resources may performed. In particular, this may be performed in order to balance the load between the servers." The request from the DSR, server a, is routed to the servers, which is interpreted as server b.

Although not indicated in the recited claim language, examiner notes it actively monitors for new servers within a cluster that are able to respond to requests, and that which is actively available, or online. Examiner points to Hickman per Col 2 lines 49-59, "The system architecture enables database capacity to be scaled by adding resources, such as additional servers, without requiring that the system be taken offline. Such scaling includes both adding one or more computer servers to a given server cluster, which enables an increase in database read transaction throughput, and adding one or more server clusters to the system configuration, which provides for increased read and write transaction throughput." The added resources, such as additional servers, is interpreted as a new server.

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To further add, examiner notes an active discovery process by monitoring for servers that are available to satisfy requests for a failed server, through clustering such as an event as a failure. This is disclosed in Hickman discloses per Col 3 lines 4-11, "The system also provides for very high availability (HA) through its use of clustering. Because each of the machines in a server cluster is an identical replica of every other machine in the cluster, if that server fails, the problem is masked from the applications. The failed machine is removed from the system and the other replica servers in the cluster are available to satisfy requests for the failed server, without any impact to the application."

Examiner argues under KSR, Hickman is combinable with Kazemi as a whole are combinable and obvious, and there is no significant change in operation with Kazemi.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being obvious over Kazemi (US 7,089,281) in view of Hickman et al. – hereinafter Hickman (US 6,523,026).

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As per claim 1, Kazemi discloses a method of dynamically balancing load in a system of servers, comprising:

a) monitoring for servers that are able to respond to requests directed at the system; (Col 2 lines 3-22, Col 15 line 64 – Col 16 line 8)

b) determining a performance metric for a first set of said servers discovered by said monitoring for the servers; (Col 5 line 62 – Col 6 line 8; storage servers 210 is interpreted as a first set of said servers; Col 6 lines 25-40)

c) maintaining a table comprising said performance metric for said discovered servers; and (Col 16 lines 17-24)

d) in response to receiving a request, routing said request to a selected server in the system of servers based on said performance metric, wherein the system of servers comprises the first set of discovered servers. (Col 16 lines 48-57)

Kazemi fails to disclose including actively discovering new servers in said system of servers. Hickman discloses including actively discovering new servers in said system of servers. (Col 3 lines 4-11, Col 4 lines 15-41) In reference to *KSR International Co. v. Teleflex Inc.*, 550 U.S. -, 82 USPQ2d 1385 (2007), it would be obvious and yielded predictable results to combine the element of discovering new server in the system of servers, or cluster in the disclosure of Kazemi to achieve the predictable results of a load balancing system which reliable, highly scaleable, and provide easy migration from existing products despite hardware or software failures.

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As per claim 2, Kazemi / Hickman discloses the method of claim 1 discloses further comprising: determining a load on ones of the servers in the system of servers. (Kazemi, Col 16 lines 48-57)

As per claim 3, Kazemi / Hickman discloses the method of claim 2, further comprising: determining a stress factor for a given server based on the performance metric of the given server and the load on the given server. (Kazemi, Col 15 lines 49-63)

As per claim 4, Kazemi / Hickman discloses the method of claim 1, further comprising: determining a stress factor for ones of the servers in the system of servers based on the performance metrics. (Kazemi, Col 15 lines 49-63, Col 16 lines 48-57)

As per claim 5, Kazemi / Hickman discloses the method of claim 1, wherein the performance metric is a response time. (Kazemi, Col 6 lines 25-40)

As per claim 6, Kazemi / Hickman discloses the method of claim 1, wherein the performance metric is a response time when the servers discovered by said monitoring are unloaded. (Kazemi Col 6 lines 25-40)

As per claim 7, Kazemi / Hickman discloses the method of claim 2, further comprising: determining a stress factor for a given server based on the

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performance metric of the given server and the load on the given server.

(Kazemi, Col 16 lines 17-24)

As per claim 8, Kazemi discloses a method of dynamically balancing load, comprising:

a) dynamically discovering a first set of servers that are able to respond to requests directed at a system; (Col 5 line 62 – Col 6 line 8; storage servers 210 is interpreted as a first set of said servers; Col 15 line 49 – Col 16 line 8)

b) determining a response time of each of the first set of discovered servers; (Col 6 lines 25-40)

c) calculating stress factors for each of the first set of discovered servers, based in part on said response time; (Col 15 lines 49-63)

d) receiving a request to the system; (Col 16 lines 17-24)

e) determining a server in the system to route the request to based on the stress factors, wherein the system comprises the first set of discovered servers; and (Col 16 lines 17-24)

f) routing said request to said server in the system determined in said e). (Col 16 lines 17-24)

Kazemi fails to disclose actively discovering new servers of said system. Hickman discloses discovering new servers of said system. (Col 3 lines 4-11, Col 4 lines 15-41) In reference to KSR International Co. v. Teleflex Inc., 550 U.S. -, 82 USPQ2d 1385 (2007), it would be obvious and yielded predictable results to combine the element of discovering new server in the system of servers, or

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cluster in the disclosure of Kazemi to achieve the predictable results of a load balancing system which reliable, highly scaleable, and provide easy migration from existing products despite hardware or software failures.

As per claim 9, Kazemi / Hickman discloses the method of claim 8, wherein said b) comprises determining a response time for each of the first set of discovered servers to a request. (Kazemi, Col 6 lines 25-40)

As per claim 10, Kazemi / Hickman discloses the method of claim 8, wherein said b) comprises determining a response time for each of the first set of discovered servers to a database query. (Kazemi, Col 6 lines 25-40)

As per claim 11, Kazemi / Hickman discloses the method of claim 8, wherein said c) comprises calculating the stress factor for each of the first set of discovered servers, based on said response time and a load for each of the first set of discovered servers. (Kazemi, Col 15 lines 49-63)

As per claim 12, Kazemi / Hickman disclose the method of claim 8. Kazemi discloses further said b) further comprises determining a response time of a second set of discovered servers not discovered in said a); said c) comprises calculating stress factors for each of the second set of discovered servers not discovered in said a), (Col 6 lines 25-40, Col 15 lines 49-63, calculates stress and response time for each server once discovered). Kazemi

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fails to disclose wherein the system further comprises the second set of discovered servers not discovered in said a). Hickman discloses wherein the system further comprises the second set of discovered servers not discovered in said a). (Col 4 lines 15-41, Col 29 lines 15-21) In reference to KSR International Co. v. Teleflex Inc., 550 U.S. -, 82 USPQ2d 1385 (2007), it would be obvious and yielded predictable results to combine the element of disclosing the second set of discovered servers not discovered in said a), or cluster in the disclosure of Kazemi to achieve the predictable results of a load balancing system which reliable, highly scaleable, and provide easy migration from existing products despite hardware or software failures.

As per claim 13, Kazemi / Hickman disclose the method of claim 12. Kazemi fails to disclose wherein said second set of discovered servers not discovered in said a) are reported to a load balancing agent in a configuration file. Hickman discloses wherein said second set of discovered servers not discovered in said a) are reported to a load balancing agent in a configuration file. (Col 11 lines 25-36, Figure 3) In reference to KSR International Co. v. Teleflex Inc., 550 U.S. -, 82 USPQ2d 1385 (2007), it would be obvious and yielded predictable results to combine the element of a node of the shepherd having maintains the official versions of the system configuration, consisting of precisely the clusters, the assignments of bases to the clusters, the state of all the bases, and the fragment map with the load balancer of Kazemi to achieve the predictable results of load balancing system which reliable, highly scaleable, and

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provide easy migration from existing products despite hardware or software failures.

As per claim 14, Kazemi discloses a system for balancing load, comprising:

a plurality of back-end servers that are able to service requests to the system; (Col 16 lines 17-24; Figure 2:item 210)

a front-end server having a load balancing agent comprising a table, wherein said front-end server receives requests that are forwarded to said back-end servers, and wherein said load balancing agent is operable to: (Col 16 lines 17-24, Col 16 lines 48-57)

monitor for back-end servers that are able to service requests to the system; (Col 15 line 64 – Col 16 line 8)

determine a performance metric for the back-end servers discovered by the monitoring; and (Col 6 lines 25-40)

determine a server of said back-end servers to route a request to based on the performance metric. (Col 16 lines 48-57)

Kazemi fails to disclose including actively discovering new back-end servers. Hickman discloses actively discovering new back-end servers. (Col 3 lines 4-11, Col 4 lines 15-41, Col 8 lines 14-18) In reference to KSR International Co. v. Teleflex Inc., 550 U.S. -, 82 USPQ2d 1385 (2007), it would be obvious and yielded predictable results to combine the element of actively discovering new back-end server, or cluster in the disclosure of Kazemi to

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achieve the predictable results of a load balancing system which reliable, highly scalable, and provide easy migration from existing products despite hardware or software failures.

As per claim 15, Kazemi / Hickman discloses the system of claim 14, wherein said load balancing agent is further operable to determine a load on a given back-end server. (Kazemi, Col 16 lines 48-57)

As per claim 16, Kazemi / Hickman discloses the system of claim 14, wherein said load balancing agent is further operable to determine a stress factor for ones of the back-end servers. (Kazemi, Col 15 lines 49-63, Col 16 lines 48-57)

As per claim 17, Kazemi / Hickman discloses the system of claim 16, wherein the stress factor for a given one of the back-end servers is based on the performance metric and the load on a given of the given one of the back-end servers. (Kazemi, Col 15 lines 49-53)

As per claim 18, Kazemi / Hickman discloses the system of claim 17, wherein said load balancing agent is able to determine which server of said back-end servers to route a request to based on the stress factor. (Kazemi, Col 16 lines 17-24)

As per claim 19, Kazemi / Hickman discloses the system of claim 14, wherein the performance metric is a response time. (Kazemi, Col 6 lines 25-40)

As per claim 20, Kazemi / Hickman disclose the system of claim 17. Hickman fails to disclose wherein said load balancing agent is able to include back-end servers that the load balancing agent did not discover in the determination of which server to route the request to. Hickman discloses wherein said load balancing agent is able to include back-end servers that the load balancing agent did not discover in the determination of which server to route the request to. (Col 8 lines 14-18, Col 11 lines 25-36, Figure 3) In reference to KSR International Co. v. Teleflex Inc., 550 U.S. -, 82 USPQ2d 1385 (2007), it would be obvious and yielded predictable results to include back-end servers that the load balancing agent did not discover in the determination of which server to route the request to in the disclosure of Kazemi to achieve the predictable results of a load balancing system which reliable, highly scaleable, and provide easy migration from existing products despite hardware or software failures.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory

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action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chirag R Patel whose telephone number is (571)272-7966. The examiner can normally be reached on Monday to Friday from 8:00AM to 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Donaghue, can be reached on (571)272-3962. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pairedirect.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

/C. R. P./

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Examiner, Art Unit 2441

/Larry D Donaghue/

Primary Examiner, Art Unit 2454